**Erna Osland: *When it rains in Africa***

Sample translation  **Chapter 1: RAIN**

**P 14-15**

**Rubus dreamt of rain**

**What is rain?**

Rain is drops of water.
Normally they are round.

Big drops merge and become one.
They look like small burgers.
Very big drops divide into two.

**How is rain made?**

Rain falls from the clouds.
But clouds can be so cold,
that the drops often freeze to ice.
Even summer rain
can begin as ice up in the sky!

So rain can first start off
as crystals of ice or snow.
But it melts while falling.
Only when it is cold down by the ground,
snow manages to remain snow all the way down.

Cold winter days can be snowy.
Warm summer days can be drizzly.

**Rainfall is many things!**

Rain is water that falls down on us
in tiny or large drops.
It can rain mildly, moderately or heavily.

Drizzle is made up of such tiny and light droplets
that they seem to swirl around us.

Sleet is snow that is so wet
that it feels like rain as it reaches us.

Snow is water that is frozen to crystals.
They can look like six-armed stars.

Hail is lumps of ice.
The lumps are often like peas,
but they can also be big as oranges.

**P 16-17**

The rain poured down in Africa.

It fell over the grass and vegetables.
It trickled and dripped.

**Rain, drizzle, snow and hail**

If it did not rain
the earth would dry out.
The wells would run dry,
and the lakes and rivers would disappear.

Rain, drizzle, snow and hail.
It is because of precipitation that
we can use the water on earth
over and over again.

Rain, drizzle, snow and hail
move in an eternal cycle,
the cycle of water.

**The life cycle**

A life cycle without beginning or end.
Still, let us begin with rain.
Rain, drizzle, snow and hail fall from the sky
and create lakes, rivers and oceans on earth.
Up rises the vapour!
And the vapour turns into clouds,
which turns into rain, drizzle, snow and hail.

**The water on earth**Almost all the water on earth is salty.
All of 97 % is sea.
Many fish can live in the sea,
but most animals need water without salt.
And where does the fresh water come from?
Well, they come from the rain!
In the course of the water’s life cycle the salt remains in the sea.

**Where do we find fresh water?**

The rain water gathers under the earth.
Human beings know how to preserve it.
We build dams and wells,
or pump up rain that is hidden underneath
deep down in the sand and crevices.
Finding such forgotten water - ground water-
is like digging up a precious treasure.

**P 18-19**

And it trickled and dripped on Rubus.

**Cloud droplets**

The rain comes from the clouds.
But in the clouds the droplets are tiny.
So tiny that they drift
In order to fall, they need to be heavier and bigger.

**How the cloud droplets become bigger**

Cloud droplets grow by bumping into each other.
The bumping happens when it’s windy.
The moment the drops become bigger
they fall gradually and slowly
and while falling,
they bump into new drops.
They bump and bump.
And become bigger and bigger.
When they are big and heavy enough
they fall like rain.
We call this drop growth.

Clouds that are high up are cold.
Here the cloud droplets often freeze to ice.
Ice and water droplets drift together.
But as they drift,
the ice attaches some of the droplets to itself.
The ice becomes heavy.
It begins to fall.
And while it falls, it keeps growing,
Like with drop growth.

And finally here is the fastest way
that small droplets can grow:

Tiny droplets cling to the salt in the sea,
or sand from the earth that the wind has swirled up.
And whoosh the droplets become big and heavy enough
to fall like “fully grown” raindrops

A cloud droplet is 0.02 mm wide.
A rain drop is 2 mm wide.
You need one million cloud droplets
to make one single drop of rain.

**p 20-21**But Rubus was not in Africa! He was in Norway in his bed.The rain was not a dream.It was real.

**Weight gives power**

Gravity causes everything that has weight,
to be drawn towards something that is even heavier.

Gravity is constantly active.
Cloud droplets are drawn towards salt or sand.
Raindrops are drawn towards the earth.
The rain falls, we say.

**Speed**

Precipitation falls at various speed.
Small things fall slowly.
Big things fall fast.

**Heavy and light rain**
Small raindrops are slow.
Big raindrops are fast.
A 5 mm drop falls 5 times faster
than a drop that is only 0.5 mm.
The drops we call drizzle fall so slowly
that they seem to be soaring.

**The slow snow**

Snowflakes have low speed.
Shaped like six-armed stars
they hover like birds or planes.

**Hail at super speed**

Hail is formed when the wind whips up the cold clouds.
Balls of ice swirl up and come down at high speed.
They collide and become increasingly bigger.
A grain of hail is as big as a pea.
It can reach a speed of 10 meters per second.
A grain of hail the size of an orange can come up
to a super speed of 50 meters per second.
And cause great damage where it lands!

**P 22-23**

It splashed outside.It dripped inside.

**Flood**

A normal rainy day can have 20 mm rain.
But 100 mm rainfall in one day is too much.

**Heavy rain can cause flood**
Great amounts of water stream out of the rivers
and take with it stones, soil and woods.

Fields are left covered in water
and bridges, roads and houses are torn up.
Massive water flow can quickly turn into a catastrophe.
Each year floods take lives across the world.

**The good flood**

Across the world many people look forward to floods.
Because water creates life!
The Nile flood fertilizes the fields in Egypt.
Other places they build dams to stop and store
the flood and use it during draughts.

**The dangerous flood**

There have always been floods, but
during the last years they seem to be increasing.

In July 2010, in China, 230 rivers flooded over.
Huge amounts of rainfall caused an avalanche,
117 million people were affected,
700 lost their lives.

In September 2014, the monsoon rain cut off
400 000 people in Kashmir.
The military saved 17 000, but 400 people lost their lives.

In Norway, there was a massive flood in the eastern parts, in 1995.
One person was killed and 7 000 were evacuated.
Trøndelag became flooded in 2006, one person was killed.
In 2014, it rained so much in Sogn and Hardanger
that houses were washed away into the fjord and the rivers.

**P 24-25**

“It’s raining!” shouted Rubus and ran in to his mother.

**Everyone needs wetness**

Every living thing needs rain.
But rain falls unevenly.
The seas get most of the rain.
The lands get much less, and
not the same amount everywhere.

**Rain all year round**

The northern hemisphere is
neither very dry nor very warm.
Such climate is called temperate.
All life is adapted to the four seasons
with varying amounts of both rain and heat

**Waiting for rain**

Some areas can switch between rain and draught
like the savannah in Africa. The animals and the plants
there can tolerate draught for a while.
The digging frog, for example, digs itself down
in the sand and waits for rain.

**A lot of water**

The rainforests have sun and rain every day
and a myriad of various types of plants and animals.

**Too dry to pee**

Some areas are almost without rain.
In the desert, live only animals and plants
that can survive without water.

In American deserts there is a rat
that never drinks and almost never pees.

**Warming themselves up on snow**

In the polar areas precipitation falls often as snow,
so the animals living there like the cold.
Penguins can hatch their eggs
in minus 60 degrees and storm!
The snow isolates against the cold and makes the frost
less dangerous for both plants and animals.

**P 26-27**

**Mum woke up**

“In Africa?” She asked happily.

“In my room,” said Rubus.

“Not again!” Mother groaned.

**How much does it rain?**

Rain is measured in millimetres.
You put out a container to collect rain.
Each day you empty the container into a rain gauge
and note the amount on the mm scale.

There are special weather stations for rain.
In Brekke in Sogn they have been measuring rain for 100 years.
The gauge there has rain in it two out of three days.
If the gauge was placed in Senegal in Africa, some months
it would have been completely without rain,
while other months it would have been full.

**Record rain**

Some places it rains every day.
Other places it seldom rains.
Here is the yearly rainfall in three places in the world:
Gulen in Norway gets on average 3500 mm.
Atacama in Chile gets less than 1mm.
Meghalaya in India had 26 462 mm in 1861 – a world record!

**Why do we measure rain?**

If we know where it rains
we also know what types of plants we can cultivate:
corn, rice, apple or onion?

So houses that have to stand in a lot of rain
should be built differently from houses that never get wet.
And bridges and roads must be built sturdily
in order to withstand rain and flood.
The way we build depends on
how much it rains.

If we know when the rain will come,
we can reap the berries, the corn and the fruit in time
And we can build houses and go out for walks in good weather.

**What do the measurements tell us?**

Rainfall is changing all around the world.
Areas that usually had a lot of rain,
have had even more rain these last years.
We see that in the number of floods, also in Norway.

And areas that had little rain in the past
have received even less than they used to, like in Africa.
There, the desert is expanding because it rains
too little and the rainfall comes later in the year than normal.